

High Performance Computing for Modeling and Simulation

Company:
The Ultra
Corporation

Location:
Syracuse, NY

Employees:
8

President:
Donald M. Leskiw

Project Officer:
David Ross
AFRL Information
Directorate,
Rome Research Site
Rome, NY



SBIR Technology

The Air Force uses general purpose electromagnetic simulations to analyze complex systems like reducing interference among radiating and passive electronic components mounted on an airborne surveillance aircraft like the Global Hawk. The Air Force developed the General Electromagnetic Model for the Analysis of Complex Systems (GEMACS). GEMACS helps solve radiation and scattering problems by examining the exterior and interior of a structure as an entire problem.

The Ultra Corporation was awarded an Air Force SBIR Phase II contract to develop high performance computing technology for Air Force computational electromagnetics applica-

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tions in command and control. It then applied this to the GEMACS to help solve large-scale antenna radiation problems. Ultra's techniques employ recently developed standards for message passing on parallel and distributed computers. The resulting models and simulations can run on networks of PCs or workstations and massively parallel supercomputers, without code modification. The parallelization of GEMACS has significantly reduced the computer run-time from days to hours.

Company Impact

As a result of this SBIR Phase II, The Ultra Corporation is now providing commercial support in computational electro-magnetics modeling and simulation for large scale, complex issues.

To date Ultra has had over \$125,000 in sales related to applying its SBIR technology to other fields. The experience gained in re-engineering the legacy code for GEMACS, enabling it to run on high performance computers, provided Ultra with new opportunities to apply its parallel software engineering techniques to other legacy systems.

Company Quote

"The Air Force SBIR Program provided Ultra with the rare opportunity to develop enabling software technologies that have an excellent return on investment."

Donald M. Leskiw

President

The Ultra Corporation

SBIR

AF SBIR Program Manager
AFRL/XPTT

1864 4th Street, Suite 1, Building 15
Wright-Patterson AFB, OH 45433

AF SBIR Program Manager: Steve Guilfoos
e-mail: steve.guilfoos@afrl.af.mil

Web site: www.tto.wpafb.af.mil/TTO/sbir/index.htm

DSN: 785-0838
DSN Fax: 785-2329
T: (800) 222-0336
F: (937) 255-2329



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